

(19) World Intellectual Property
Organization
International Bureau



Rec'd PCT/PTO 14 JUL 2004



(43) International Publication Date
11 March 2004 (11.03.2004)

PCT

(10) International Publication Number
WO 2004/020107 A1

(51) International Patent Classification⁷: B04C 9/00, 11/00

(21) International Application Number:
PCT/GB2003/003761

(22) International Filing Date: 27 August 2003 (27.08.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0220277.8 31 August 2002 (31.08.2002) GB

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(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,

CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.

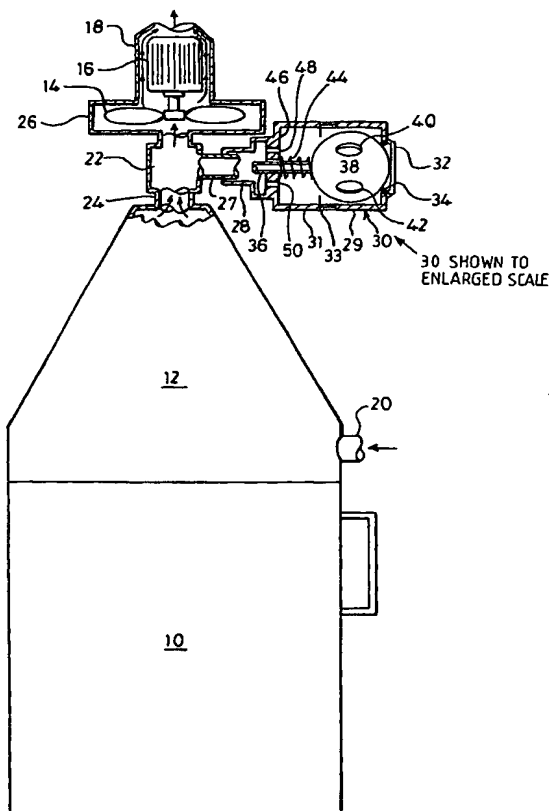
(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: IMPROVEMENTS IN AND RELATING TO PARTICLE SEPARATION APPARATUS



(57) Abstract: Particle separation apparatus comprises a cyclone particle separating means, a particle collecting chamber and a fan driven by an electric motor for drawing particle laden air into and through the apparatus. A valve is provided, upstream of the suction fan driving motor and downstream of the cyclone particle separating means, which includes a valve closure and a valve seat against which the closure is normally resiliently urged to prevent air flowing through the valve. The valve is mounted so as to communicate with a passage between the cyclone particle separating means and the fan so that air pressure within the passage acts on one side of the closure while the other side of the closure is exposed to ambient air pressure. In use if the air pressure in the passage leading from the cyclone particle separating means to the fan falls below ambient by more than a predetermined amount, the pressure differential acting on the closure creates a force sufficient to overcome the resilient force acting thereon and the closure will become displaced from the seating and allow air to enter the passage to maintain an air flow to and around the fan motor. The closure is urged into the closed position by a resiliently deformable member acting on the one side of the closure, and is located within a hollow housing. The resiliently deformable member is a spiral spring which acts between the rear of the closure and one end of the housing and an opening is provided in the opposite end of the housing defining the valve seating, and the area of the opening is less than the area of the closure.

INTERNATIONAL SEARCH REPORT

Internal Application No

PCT/GB 03/03761

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 B04C9/00 B04C11/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B04C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2001/029845 A1 (BURLINGTON GEOFFREY MICHAEL ET AL) 18 October 2001 (2001-10-18)	1-6, 8, 16, 20
Y	page 1, paragraphs 1, 8, 11 page 2, paragraph 25 - page 3, paragraph 38 page 4, paragraph 42 figures 2, 2A, 3, 3A, 4, 4A, 4B	7, 9
Y	US 5 062 870 A (DYSON JAMES) 5 November 1991 (1991-11-05) column 1, line 7 - line 29 column 4, line 45 - line 49 column 6, line 16 - line 19 figure 1	7, 9



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents:

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

8 document member of the same patent family

Date of the actual completion of the international search

5 December 2003

Date of mailing of the international search report

19/12/2003

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INTERNATIONAL SEARCH REPORT

Internat. Application No.

PCT/JP 03/03761

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 913 334 A (HYUN KWANGS00) 22 June 1999 (1999-06-22) column 1, line 5 - line 20 column 3, line 63 -column 4, line 1 column 5, line 49 - line 67 figure 1 ---	1
A	GB 2 111 854 A (STAVBY SILNIC A ZELEZNIC N P) 13 July 1983 (1983-07-13) page 1, column 5 -column 20 page 1, column 53 -column 77 figure 1 -----	1

INTERNATIONAL SEARCH REPORT

Int'l application No.
CT/GB 03/03761

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 22
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

Continuation of Box I.2

Claims Nos.: 22

Rule 6.2a) PCT:

Claim 22 contains references to the description and the drawings.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

INTERNATIONAL SEARCH REPORT

Intern: Application No

PCT/GB 03/03761

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